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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/530,354

Applicant(s)

RUST, GEORG-FRIEDERMANN

Examiner

NANCY BITAR

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 04 April 2005 is/are: a) ☒ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/ISD)
Paper No(s)/Mail Date 6/05/06

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the beneficial views of the virtual coloscopy as described in the specification where each of element 1-4 shows a axial, frontal, sagittal and oblique view respectively, the examiner is not able to discern the major elements in the figure in order to distinguish between the views. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

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2. Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

3. Claim 9 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 9 defines a "computer program product" embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive

material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” – Guidelines Annex IV). That is, the scope of the presently claimed a “computer program product” can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on “computer-readable medium” or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Objections

4. Claim 11 is objected to because of the following informalities: Claim 11 recited an imaging processing and reproducing system for performing a method according to claim 1 (lines 1 and 2, page 5) and on page 6 lines 2-3 it is recited that the computer is adapted to perform the steps (a) and (d) of the method according to claim 1. It is clear that the system of claim 11 depends on claim 1 so there is no need to address the dependency twice. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 9 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 9 and 11 teaches the program being adapted to perform the steps (a) and (d) of the method. It is unclear whether the program will perform the step (a) only and step (d) only or the program will perform the step (a) through (d) of the method.

Examiner Notes

7. Examiner cites particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-6, 8-13, 18-20 are rejected under 35 U.S.C. 102 (b) as being anticipated by Johnson ET al. (US 5,891,030).

As to claims 1, Johnson et al teaches a method for processing of a three-dimensional image data set, wherein (a) the three-dimensional image data set is converted to at least two different data representations for image reproduction (two views of the three dimensional images are displayed to the observer, column 2, lines 63-column 3, lines 1-5); (b) the at least two different data representations are reproduced (2D reformatted image, figure 5); (c) one image section that is shown in one of the data representations is markable (column 7, lines 31-35); (d) for the at least one other data representation the relative position of the marked image section is calculated (2D axial images are updates to views corresponding to the designated position, note that the position is calculated, note that does not require that the view point be limited to the midline. Images can be rendered from any position by selecting a view point on the 2D reformatted images, column 11, lines 15-25) ; (e) the relative position of the marked image section is shown in the at least one other data representation(a fiducial mark on all images identifies the new position, column 11, lines 15-26) .

As to claims 2, Johnson et al teaches a method according to claim 1, wherein at least one data representation is a sectional view and at least one data representation is a three-dimensional view (column 7, lines 17-35, note that the display displays a reformatted 2D image, two orthogonal images, a view of the entire straightened colon, an enlarged image of one section of the straightened colon, and the raw axial 2D image. Two views of the three dimensional intraluminal images are displayed to the medical practitioner, column 11, lines 29-55, figures 4 and 6).

As to claims 3, Johnson et al teaches a method wherein the at least one sectional view comprises an axial view and/or a frontal view and/or a sagittal view and/or an oblique view; and the at least one three-dimensional view comprises a wall view and/or an intraluminal view (axial 50, coronal 52 and sagittal 54 cross sections, column 7, lines 20-23, figure 4, note that the orientation of the midline can be ascertained using the 2D cross section or 3D interlamine views , column 8, lines 30-32)).

As to claims 4, Johnson et al teaches a method according to claim 1, wherein at least one of the data representations is a topogram view (3D extraluminal rendering in axial, coronal and sagittal images, column 8, lines 21-34).

As to claims 5, Johnson et al teaches a method according to claim 1, wherein the at least one other data representation is changed so that the image section marked in the one data representation is also shown in the at least one other data representation (parameter adjustment window, shown in figure 8 are used to adjust other settings and parameter within the system, column 7, lines 31-35).

As to claims 6, Johnson et al teaches a method according to claim 1, wherein the shown image section is marked manually and/or by means of a structure and/or texture recognizing method (the observer can choose which area of the colon to inspect by choosing a point on the extraluminal rendering of the colon or on the two straightened images of the colon, column 11, lines 60-63 and column 7, lines 65-column 8, lines 1-44).

As to claims 8, Johnson et al teaches a method according to claim 1 for use in virtual endoscopy, in particular, virtual coloscopy (column 2, lines 63-67; note that 3D intraluminal

image. An image which simulates an endoscopic view of the colon. The outside of the colon is not visualized; a 3D intraluminal image view is rendered that roughly corresponds to the video images from colonoscopy, column 7, lines 29-32).

As to claims 9, Johnson et al teaches a computer program product to be read by or to be implemented in a computer respectively and that is adapted to perform the steps (a) and (d) of the method according to claim 1 (computer program, column 5, lines 1-12).

As to claims 12-13, Johnson et al teaches at least one of the data representations is a topogram view (figure 4 and 6, note that displaying both views makes it less likely that a feature of interest will be obscured due to the topology of the colon).

The limitation of claim 10-11, 18, and 19 has been addressed above. Claims 1-3 differ from claims 10-11, 18, and 19 only in that claims 1-3 are method claims whereas, claims 10-11, 18, and 19 are system claims. Thus, claims 10-11, 18, and 19 are analyzed as previously discussed with respect to claims 1- 3 above.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 7,14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al in view of Zhang et al (The Curvature –Vector Pair and its application in displaying CT colon Data, 2002 SPIE).

While Johnson meets a number of the limitations of the claimed invention, as pointed out more fully above, Johnson fails to specifically teach the at least one of the data representations is a wall view with a line of sight that is parallel and/or anti-parallel to the curvature vector at the maximum curvature of the mid-line of the hose-shaped body.

Specifically, Zhang et al. teaches a process of generating sample points and setting up correspondence between points on the colon surface and pixels in a 2D array (figure 1) where a curvature of the colon surface is being extracted and analyzed by constructing curves in four directions at each surface point, calculated curvatures, selected the maximum and minimum curvature, and performed thresholding to obtain candidate locations for potential polyps (page 219, lines 1-6). it would have been obvious to one of ordinary skill in the art to use the curvature vector in Johnson et al analysis in order to facilitate early detection and removal of colonic polyps thus improving the detection sensitivity and low false positive rates .Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention by applicant.

The limitation of claim 20 has been addressed above. Claim 20 differ from claim 7 only in that claim 7 is a method claims whereas; claim 20 is a system claim. Thus, claim 20 is analyzed as previously discussed with respect to claim 7 above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NANCY BITAR whose telephone number is (571)270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew W. Johns/
Primary Examiner, Art Unit 2624

Nancy Bitar

3/20/2008